

REMARKS**I. Introduction**

Applicants would like to thank the Examiner for the telephonic interview conducted April 14, 2004. In response to the pending Office Action dated April 5, 2004, Applicants have amended claims 1, 20, 25, 27 and 32 so as to address the pending rejection under 35 U.S.C. § 112, first paragraph, and to further clarify the claimed subject matter. Applicants have also added new claims 36-38. Support for these amendments can be found, for example, in Figs. 6-7, and 9-11 and their corresponding sections of the specification. No new matter has been added.

For the reasons set forth below, Applicants respectfully submit that all pending claims are patentable over the cited prior art references.

II. The Rejection Of The Claims Under 35 U.S.C. § 112, First Paragraph

Claims 1-13, 16-20, 23-30, 33 and 34 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

Specifically, the Examiner asserts that it is “unclear where in the specification the elastic body is described as having a concave shape relative to the upper surface of the first laminate.” In an effort to advance the prosecution expeditiously, the foregoing phrase has been deleted from the claims. Thus, these rejections under 35 U.S.C. § 112, first paragraph, are moot.

III. The Rejection Of The Claims Under 35 U.S.C. § 112, Second Paragraph

Claims 1-13, 16-20, 23-30, 33 and 34 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

The Examiner asserts that the phrase “said elastic body in contact with an upper surface of said first laminate having a concave relative to the upper surface of the first laminate when the elastic body is pressed into contact with the first laminate” is unclear. It is respectfully submitted that the foregoing claim language has been deleted. Thus, the rejections under 35 U.S.C. § 112, second paragraph, to claims 1-13, 16-20, 23-30, 33 and 34 are moot.

IV. The Rejection Of Claims 1, 25, 27 and 32 Under 35 U.S.C. § 103

Claims 1-11, 13, 16-19, 24-30 and 32-35 are rejected under 35 U.S.C. § 103 as being unpatentable by USP No. 5,573,622 to Hass in view of USP No. 5,268,415 to Pieterse and GB 2274810 to Kodera, and optionally in view of USP No. 5,478,420 to Gauci. Applicants respectfully traverse this rejection for at least the following reasons.

Claims 1 and 32 relate to a manufacturing method of laminates comprising: having a pressing force applied thereto together with heating the first laminate at a temperature higher than the temperature at which the polyolefin is softened, while claims 1, 25, 27 and 32 direct to a first laminate being maintained in a depressurized atmosphere prior to and during application of the pressing force.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the *claimed invention* where there is some teaching, suggestion, or

motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *Ecolochem Inc. v. Southern California Edison Co.*, 227 F.3d 1361, 56 U.S.P.Q.2d (BNA) 1065 (Fed. Cir. 2000); *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2D (BNA) 1614, 1617 (Fed. Cir. 1999); *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992). See also **M.P.E.P § 2143.01**.

Neither Hass, Pieterse, Kodera, nor Gauci, taken alone or in combination, disclose or suggest the combination of elements of claims 1 and 32 as a whole, including having a pressing force applied thereto together with heating the first laminate at a temperature higher than the temperature at which the polyolefin is softened, or maintaining the first laminate in a depressurized atmosphere prior to and during application of the pressing force in the second step as recited in claim 1, 25, 27 and 32.

Specifically, Hass discloses using a barrier/release material 52 when laminating stacks of porous materials, where the barrier/release material may be needed if the stack contains binders or additives that soften or become adhesive (tacky) under the heat and pressure used during the lamination process. Hass also discloses utilizing a barrier/release layer 52 if the pressure and temperatures used in the lamination step are sufficient to cause the binders within stack 10 to become sticky or tacky, and to adhere to the resilient, compliant material 36 (col. 6, lines 23-28 and lines 48-52). The Examiner asserts that Hass discloses laminating the multilayer stack using the binder contained in the sheets of the stack, where the binder becomes tacky during pressing. However, Hass merely discloses maintaining a sufficient pressure and temperature so as to keep the stack 10 adhesive. Nowhere does the combination of Hass, Pieterse, Kodera and Gauci disclose

or suggest applying a pressing force together with heating the first laminate at a temperature higher than the temperature at which the polyolefin is softened. Indeed, Hass asserts that the temperature chose to produce the laminated green sheets is not considered to be critical to practicing the invention (col. 5, lines 31-34). Thus, at a minimum, Hass does not disclose or suggest having a pressing force applied thereto together with heating the first laminate at a temperature higher than the temperature at which the polyolefin is softened as recited in claims 1, 20 and 32.

Furthermore, in accordance with one embodiment of the present invention, when no gas exists inside the first laminate 13 at the time of applying the pressing force, one composite structure can be established between the layers, thereby preventing structural defects from occurring (see, e.g. 27, lines 6-19 of the specification). It is preferable that the gas inside the first laminate 13 be eliminated before the step of pressing force application while keeping the first laminate 13 in a depressurized state during the period of the pressing force application.

The Examiner admits that “Hass is silent to a specific teaching for depressurizing (i.e. applying a vacuum to) the multilayer structure to lamination,” but alleges that Hass discloses “evacuating the air in the multilayer to avoid entrapping air during lamination.”

However, in contrast to the Examiner’s assertion, Hass discloses providing a porous insert between 36’ and 56, or over the upper surface of the stack for evacuating air that would otherwise be trapped around the stack. Nowhere does Hass mention or even recognize that the stack is maintained in a depressurized atmosphere prior to and during pressing of the upper platen 34 or lower platen 32. Indeed, Hass discloses laminating the green ceramic tape at a rate of 5° to 500° C/min to a peak temperature in the range of

about the room temperature to about 150° C for a period of about 1-100 seconds and applying pressure in the range of 100-5,000 psi. Hass further discloses that as the upper platen 34 is lowered, the load applied to the upper and lower platens is such that the applied pressure is in the range of 100 to 5,000 psi (col. 4, lines 37-47 and col. 7, lines 9-10) for approximately 1 to 3 minutes. In other words, Hass specifically discloses pressurizing the green ceramic tape before the heating cycle for bonding the various layers can take place (col. 7, lines 15-19). As such, modifying Hass by depressurizing the stack 10 in the manner asserted by the Examiner would render Hass inoperable. Thus, at a minimum, the combination of Hass, Pieterse, Koderer and Gauci does not disclose or suggest that the first laminate being maintained in a depressurized atmosphere prior to and during application of the pressuring force.

Moreover, claim 1, as amended, recites obtaining a second laminate by having said first laminate sandwiched between an upper rigid body forming a cavity containing a first elastic body and a lower rigid body forming a cavity containing a second elastic body, wherein a center portion of the upper rigid body is made movable so as to press the first elastic body into contact with the upper surface of the first laminate, and wherein a center portion of the lower rigid body is made movable so as to press the second elastic body into contact with the lower surface of the first laminate.

As discussed during the telephonic interview, the combination of Hass, Pieterse, Koderer and Gauci does not disclose or suggest any center portion being made movable, let alone suggest utilizing the center portion of the upper rigid body and the lower rigid body for pressing the first elastic body and the second elastic body into contact with the upper surface and lower surface of the first laminate, respectively. Thus, clearly, the combination

of Hass, Pieterse, Koderer and Gauci fails to disclose or suggest the foregoing claim limitation.

With regard to claim 25, this claim recites an upper rigid body forming a cavity containing a first elastic body and a lower rigid body forming a cavity containing a second elastic body, wherein, when the pressing force is applied to the second elastic body, the second elastic body covers a lower surface and the side surface of the first laminate. Indeed, Hass appears to disclose only one resilient material 36, and does not disclose a second resilient material for covering the lower surface and side surface of the three-layered stack 10. Thus, the combination of Hass, Pieterse, Koderer and Gauci fails to disclose or suggest a first elastic body and a second elastic body, wherein the second elastic body covers a lower surface and the side surface of the first laminate.

With regard to claim 27, this claim recites a second step of preparing a second laminate and a third step of obtaining a third laminate by having the first laminate sandwiched between a first elastic body and a steel plate, and obtaining a fourth laminate by having the second laminate sandwiched between a second elastic body and the steel plate, wherein the second elastic body covers a lower surface and at least one side surface of the second laminate. Hass does not appear to disclose or suggest any steel plate, let alone suggest obtaining a third laminate and a fourth laminate by having the first laminate and second laminate sandwiched between a first elastic body and a steel plate, and a second elastic body and a steel plate, respectively. Thus, at a minimum, the combination of Hass, Pieterse, Koderer and Gauci fails to disclose or suggest the claim limitations as recited in amended claim 27.

With regard to claim 32, this claim recites a second step of obtaining a second laminate by having said first laminate sandwiched between an upper rigid body forming a cavity containing a first elastic body and a lower rigid body comprising a cavity forming a second elastic body, wherein a first non-adhesive film is formed on the upper surface of the first laminate and a second non-adhesive film is formed on the lower surface of the first laminate, and wherein a center portion of the upper rigid body is made movable so as to press the first elastic body into contact with the first non-adhesive film, and wherein a center portion of the lower rigid body is made movable so as to press the second elastic body into contact with the second non-adhesive film. The Examiner alleges that a barrier/release layer 52 is formed on the surface of the three-layered stack 10. However, claim 32, as amended, recites a first non-adhesive film and a second non-adhesive film be formed on the upper and lower surface of the first laminate, respectively. It does not appear that the combination of Hass, Pieterse, Koderia and Gauci disclose or suggest any non-adhesive film, let alone suggest that a center portion of the upper rigid body is made movable so as to press the first elastic body into contact with the first non-adhesive film, and a center portion of the lower rigid body is made movable so as to press the second elastic body into contact with the second non-adhesive film. Thus, at a minimum, the combination of Hass, Pieterse, Koderia and Gauci fails to disclose or suggest the foregoing limitation, as recited by amended claim 32.

Thus, as each and every limitation must be either disclosed or suggested by the cited prior art in order to establish a *prima facie* case of obviousness (see, **M.P.E.P. § 2143.03**), and the combination of Hass, Pieterse, Koderia and Gauci fails to do so, it is respectfully

submitted that claims 1, 25, 27 and 32 and any of the claims dependent thereon are patentable over the cited prior art.

V. **The Rejection Of Claims 20 and 23 Under 35 U.S.C. § 103**

Claims 20 and 23 are rejected under 35 U.S.C. § 103 as being unpatentable over Hass in view of Kodera. Applicants respectfully traverse this rejection for at least the following reasons.

Claim 20 is directed to a pressing force application equipment comprising: a first pressing force application member with a first elastic body provided inside of a first rigid body; and a second pressing force application member with a second elastic body provided inside of a second rigid body, and also at least one of the first pressing force application member and second pressing force application member is made movable, the first rigid body having a first air outlet for evacuating gases and a first elastic frame member disposed on a lower surface thereof, and the second rigid body having a second air outlet for evacuating gases and a second elastic frame member disposed on an upper surface thereof, wherein the pressing force application equipment applies a pressing force before a pressed body is heated at the temperature higher than the softening temperature of polyolefin contained in the pressed body, and wherein at least one of the first elastic frame member and second elastic frame member is pressed into contact with the other elastic frame member.

Turning to the cited prior art, Hass discloses using a barrier/release material 52 when laminating stacks of porous materials, where the barrier/release material may be needed if the stack contains binders or additives that soften or become adhesive (tacky) under the heat and pressure used during the lamination process. Hass also discloses

utilizing a barrier/release layer 52 if the pressure and temperature used in the lamination step are sufficient to cause the binders within stack 10 to become sticky or tacky, and to adhere to the resilient, compliant material 36 (col. 6, lines 23-28 and lines 48-52). The Examiner asserts that Hass discloses laminating the multilayer stack using the binder contained in the sheets of the stack, where the binder becomes tacky during pressing. However, Hass merely discloses maintaining a sufficient pressure and temperature so as to keep the stack 10 adhesive. Nowhere does the combination of Hass and Kodera disclose or suggest applying a pressing force before a pressed body is heated at a temperature higher than the softening temperature of polyolefin contained in the pressed body. Indeed, Hass asserts that the temperature chose to produce the laminated green sheets is not considered to be critical to practicing the invention (col. 5, lines 31-34). As such, it is respectfully submitted that one of ordinary skill in the art would NOT have been realistically motivated to modify the apparatus for fabricating multilayer structures of Hass. It does not appear that the combination of Hass and Kodera disclose or suggest a first air outlet for evacuating gases, a second air outlet for evacuating gases, a first elastic frame member, and a second elastic frame member.

Thus, as each and every limitation must be either disclosed or suggested by the cited prior art in order to establish a *prima facie* case of obviousness (see, **M.P.E.P. § 2143.03**), and the combination of Hass and Kodera fails to do so, it is respectfully submitted that claim 20 is patentable over the prior art.

It should also be recognized that the fact that the prior art could be modified so as to result in the combination defined by the claims at bar would not have made the modification

obvious unless the prior art suggests the desirability of the modification. *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986).

Moreover, recognizing after the fact that such a modification would provide an improvement or advantage, without suggestion thereof by the prior art, rather than dictating a conclusion of obviousness, is an indication of improper application of hindsight considerations. Simplicity and hindsight are not proper criteria for resolving obviousness. *In re Warner*, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967).

It is only Applicants' disclosure that discloses the foregoing pressing force application equipment. Neither Hass nor Koderer disclose or suggest a first air outlet, a second air outlet, a first elastic frame member, and a second elastic frame member, wherein the pressing force application equipment applies a pressing force before a pressed body is heated at the temperature higher than the softening temperature of polyolefin contained in the pressed body, and wherein at least one of the first elastic frame member and second elastic frame member is pressed into contact with the other elastic frame member. Thus, the only motivation of record for the proposed modification of the method of Hass to arrive at the claimed invention is found in Applicants' disclosure which, of course, may not properly be relied upon to support the ultimate legal conclusion of obviousness under 35 U.S.C. § 103. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 2271 USPQ2d 1593 (Fed. Cir. 1987).

For all of the foregoing reasons, Applicants respectfully submit that claims 20 and 23 are patentable over the cited prior art.

VI. All Dependent Claims Are Allowable Because The Independent Claims From Which They Depend Are Allowable

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claims 1, 5 and 19 are patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also in condition for allowance.

For all of the foregoing reasons, it is submitted that claims 1, 20, 25, 27 and 32 are patentable over the cited prior art. Accordingly, it is respectfully requested that the rejections of claims 1-35 under 35 U.S.C. § 103 be withdrawn.

Furthermore, the combination of Hass, Pieterse, Koderer and Gauci does not appear to disclose or suggest any of the claim limitations as recited by newly added claims 36-38. As such, it is respectfully submitted that claims 36-38 are patentable over the cited prior art.

Further, the Examiner has rejected claim 24 under 35 U.S.C. § 103 as being unpatentable over Hass in view of Koderer (see, page 13 of Office Action). However, claim 24 is dependent upon claim 1, which has been rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Hass, Pieterse, Koderer and Gauci. As such, it is respectfully submitted that the Examiner has improperly rejected claim 24, and withdrawal of claim 24 under 35 U.S.C. § 103 as being unpatentable over Hass in view of Koderer is respectfully requested.

VII. Conclusion

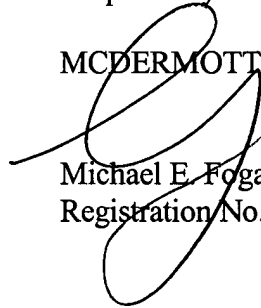
Accordingly, it is urged that the application is in condition for allowance, an indication of which is respectfully solicited.

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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